

What is claimed is:

1. A system for establishing an end-to-end data path connection to transfer data between an origination site and a destination site, said system comprising:
 - 5 [a] an interface circuit for receiving physical data signals and data routing configuration information through a transmission channel coupled to said origination site;
 - [b] a data routing control circuit, for setting up a data route between said origination site and said destination site based on the data routing configuration information; and
 - 10 [c] an access router for routing said data through the data route

wherein said data path connection is formed by the data route, and can include any one or more of the following data paths: (i) a switched circuit network; and/or (ii) a wide area network (WAN); and/or (iii) one or more digital cross-connects.
2. The system of claim 1, wherein the data routing configuration information can include information pertaining to whether a time sensitive data path connection is required.
- 15 3. The system of claim 2, wherein the data routing control circuit routes time sensitive data through the switched network, the digital cross-connect, or some other available data path other than the wide area network.
4. The system of claim 2, wherein the data routing control circuit routes non-time sensitive data through the wide area network or some other available data paths other than the switched network and digital cross-connects.
- 20 5. The system of claim 1, wherein the data routing configuration information can include information pertaining to a desired target data rate.
6. The system of claim 5, wherein the data routing control circuit dynamically determines a maximum target data rate of available data paths and sets up said data path connection based on this determination.
- 25 7. The system of claim 1, wherein the data routing configuration information can include information pertaining to costs associated with setting up the data path connection.
8. The system of claim 7 wherein the data routing control circuit dynamically determines a cost associated with available data paths, and sets up said data path connection based on this determination.
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9. The system of claim 1, wherein the data routing configuration information can include information pertaining to the connection model used at the origination site, including whether such site utilizes a dial-up or always-on connection.
10. The system of claim 1, wherein the data routing control circuit dynamically determines which available data paths are best suited for the connection model used at the origination site.
11. The system of claim 1, wherein the transmission channel is a digital subscriber loop (DSL).
12. The system of claim 11, wherein the interface circuit also separates the data into voice signals and DSL signals.
13. The system of claim 12, further including a pulse code modulation circuit for converting the voice signals into digital voice signals for routing through the switched network.
14. The system of claim 1, further including: (i) a circuit switched network interface circuit; (ii) a wide area network interface circuit; and (iii) a digital cross-connect interface circuit.
15. The system of claim 1, wherein the WAN can be selected for setting up a high speed data link in excess of 128Kb/s.
16. The system of claim 1, wherein the WAN optionally transfers data using any or all of the following: packet switching, frame relay, and asynchronous transfer mode (ATM).
17. The system of claim 1, wherein the public switched telephone network (PSTN) can be selected to transfer time sensitive data by setting up one or more dedicated 64Kb/s links.

18. A system for establishing a data path connection between an originating site and a destination site, said originating site being coupled to said destination site both through a first data path having minimal data transmission delay characteristics and a second data path having substantially greater data transmission delay characteristics, said system comprising:
- 5 an interface circuit for receiving data path connection configuration information from said originating site; and
- a setup circuit for setting up said first path and/or said second path as said data path connection based on the connection configuration information.
19. The system of claim 18, wherein said connection configuration information can set up said first path as said data path connection for time sensitive data signals, and can further set up said second path as said data path connection for any other data signals.
20. The system of claim 18, wherein said first path includes a public switched telephone network (PSTN) and/or digital cross-connects (DCS) and said second path includes a wide area network (WAN).
21. The system of claim 18, wherein the data routing configuration information can include information selecting one or more of the data routes, as well as a target data rate.
22. The system of claim 18, wherein both the originating and destination sites are coupled by digital subscriber loops to said first and second data paths, and the setup circuit further sets up a data rate for said data path connection based on a target data rate from said originating site, data transfer rate capabilities of said first and second data paths, and data transfer capabilities of the digital subscriber loops.
23. The system of claim 18, wherein the data rate is also based on data processing capabilities of said originating and destination sites.

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24. A system for establishing a data path connection between a originating site and a destination site, said originating site being coupled to said destination site both through a first data path having first data transmission rate and a second data path having a substantially greater data transmission rate, said system comprising:
- 5 an interface circuit for receiving data path connection configuration information from said originating site; and
- a setup circuit for setting up said first path and/or said second path as said data path connection based on the connection configuration information.
25. The system of claim 24, wherein said connection configuration information includes
- 10 information pertaining to a desired data transmission cost, and the setup circuit can set up either of said first path or second data paths as said data path connection based on the desired data transmission cost and data transmission availability of said data paths.
26. The system of claim 24, wherein said connection configuration information includes
- information pertaining to a desired data transmission connection model, and the setup circuit can set up either of said first path or second data paths as said data path connection based on the desired data transmission connection model and data transmission availability of said data paths.
27. The system of claim 24, wherein said first path includes a public switched telephone network (PSTN) and/or digital cross-connects (DCS), and said second path includes a wide area
- 20 network (WAN).
28. The system of claim 24, wherein both the originating and destination sites are coupled by digital subscriber loops to said first and second data paths, and the setup circuit further sets up a data rate for said data path connection based on a target data rate from said originating site, data transfer rate capabilities of said first and second data paths, and data transfer
- 25 capabilities of the digital subscriber loops.
29. The system of claim 24, wherein the data rate is also based on data processing capabilities of said originating and destination sites.

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30. A system for establishing a data path connection between an originating site and a destination site, said originating site being coupled to said destination site both through a first data path having first dynamic data transmission characteristics including a first data transmission delay, and a second data path having second dynamic data transmission characteristics including a second data transmission delay substantially different from said first data transmission delay, said system comprising:

an interface circuit for receiving data path connection configuration information from said originating site; and

a setup circuit for setting up said first path and/or said second path as said data path connection based on the connection configuration information and said first and second dynamic data transmission characteristics.

31. The system of claim 30, wherein the first and second dynamic data transmission characteristics include first and second data transmission availability parameters, first and second data transmission costs, and first and second data transmission connection models.
32. The system of claim 30 wherein said connection configuration information can set up said first path as said data path connection for time sensitive data signals, and can further set up said second path as said data path connection for any other data signals.
33. The system of claim 30, wherein said first path includes a public switched telephone network (PSTN) and/or digital cross-connects (DCS) and said second path includes a wide area network (WAN).
34. The system of claim 30, wherein the data routing configuration information can include information selecting one or more of the data routes, as well as a target data rate.
35. The system of claim 30, wherein both the originating and destination sites are coupled by digital subscriber loops to said first and second data paths, and the setup circuit further sets up a data rate for said data path connection based on a target data rate from said originating site, data transfer rate capabilities of said first and second data paths, and data transfer capabilities of the digital subscriber loops.
36. The system of claim 30, wherein the data rate is also based on data processing capabilities of said originating and destination sites.

37. A system for routing data from an originating site to a destination site through a configurable data route, said system comprising:

[a] an interface circuit for receiving said data through a transmission channel coupled to said originating site; and

[b] a conversion circuit for converting said data into routable data signals; and

[c] an access circuit for routing said routable data signals through said data route to said destination site;

wherein the data route can be configured to include either or both of a first and second data path; and

further wherein the first and second data paths have associated first and second data transmission delay characteristics and first and second data transfer rate characteristics.

38. The system of claim 37, wherein said first data path includes a switched network and/or a digital cross-connect, and said second data path includes a wide area network.

39. The system of claim 38 wherein the access circuit routes time sensitive routable data signals through the switched network or the digital cross-connect.

40. The system of claim 39 wherein the public switched telephone network (PSTN) transfers data by setting up one or more dedicated high speed circuit switched connections.

41. The system of claim 40, wherein the access circuit routes the routable data signals that are not time sensitive through the wide area network.

42. The system of claim 38, wherein the access circuit sets up the second path for data transfers requiring a transfer rate in excess of the first data transfer rate.

43. The system of claim 38, wherein the WAN transfers data using frame relay and/or asynchronous transfer mode data packet switching.

44. The system of claim 37, wherein the transmission channel is a digital subscriber loop (DSL).

45. The system of claim 37, wherein the interface circuit also separates the data into voice signals and DSL signals.

46. The system of claim 45, further including a pulse code modulation circuit for converting the voice signals into digital voice signals for routing through the switched network.

47. The system of claim 37, further including: (i) a switched network interface circuit; (ii) a wide area network interface circuit; and (iii) a digital cross-connect interface circuit.

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48. A method for accessing a communications system from an originating site, said system having access to a first data path having first data transmission characteristics and a second data path having second data transmission characteristics for transferring data, said method including the steps of:

[a] initiating an access request to said communications system, the access request including information concerning requested data transmission characteristics for a desired data transfer; and

[b] determining whether the access request is related to a request for voice signal transmission or a data signal transmission; and

[c] selecting and configuring a data route for data transfer to a destination site using said first and/or second data paths by determining which of said first and second data transmission characteristics best matches the requested data transmission characteristics.

49. The method of claim 48, wherein said first data path is selected and configured when the access request is related to a voice signal, and either or both of said first and second data paths are selected and configured when the access request is related to a data signal.

50. The method of claim 48, wherein the first and second data transmission characteristics can include any one or more of the following:

- (a) availability of such data path; and/or
- (b) cost per unit of transmission bandwidth of such data path; and/or
- (c) data transfer rates achievable using such data path; and/or
- (d) data transfer delays of such data path.

51. The method of claim 48, wherein the data route can be configured during step [c] based on data transfer rate capabilities of the destination site, said originating site, and the first and second data paths.

52. The method of claim 48, wherein during step [c] the data route can be selected such that time sensitive data signals are routed through said first path, and non time sensitive signals are routed through said second path.

53. The method of claim 48, wherein during step [c] the data path having the least cost per unit of transmission bandwidth can be selected for the data route.

54. The method of claim 48, wherein said first data path is a circuit switched network and/or a digital cross-connect, and said second data path is a wide area network.

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55. The method of claim 48, wherein the access request includes a distinct signaling message for indicating a request for data signal transmission.

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56. A method of establishing an end-to-end data path connection between an originating site and a destination site using either or both of a first data path having first data transmission characteristics, and a second data path having second data transmission characteristics, said method including the steps of:

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- (a) processing data route configuration information received from said originating site, said configuration information including a request for establishing a data route; and
 - (b) communicating with said destination site and determining whether a data route can be set up based on the configuration information; and
 - 10 (c) determining which of said data paths should be used based on the configuration information and said first and second data transmission characteristics; and
 - (d) establishing and controlling a data route implemented using either or both of said first and second data paths;

15 wherein a data route for transferring data between said originating site and destination site can be effectuated based on the configuration information from said originating site.

57. The method of claim 56, wherein said first data path includes a circuit switched network and said second data path includes a wide area network.

58. The method of claim 56, wherein the data route configuration information can include information pertaining to whether a time sensitive data route is required.

59. The method of claim 56, wherein during step (d) time sensitive data is routed through a circuit switched network or a digital cross-connect or other available data paths with minimal data transmission delay characteristics.

60. The method of claim 56, further including a step (e): converting voice signals from the originating site into digital voice signals for routing such signals through a switched network or another data path having minimal data transmission delay characteristics.

61. The method of claim 56, wherein during step (c) a WAN can be selected for setting up a high speed data link in excess of 128Kb/s.

62. The method of claim 61, wherein during step (d) the WAN optionally transfers data using any or all of the following packet switching protocols: (i) frame relay; and/or (ii) asynchronous transfer mode (ATM).

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63. The method of claim 56, wherein during step (c) a public switched telephone network (PSTN) can be selected to transfer time sensitive data by setting up one or more dedicated 64Kb/s links.

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